

Guideline for Rescue Services Electric Vehicle

***E* CANTER**



Introduction

eCANTER1.0 is a modified electric vehicle equipped with a high voltage system consisting of lithium ion batteries, inverter, electric motor, etc. The diesel engine has been replaced.

Since this vehicle uses high voltage lithium-ion batteries (working voltage is 420 V) for the traction motor, inappropriate handling may lead to serious accidents, such as electric shock.

Read this document carefully.

This manual describes precautions when handling a vehicle after an accident.

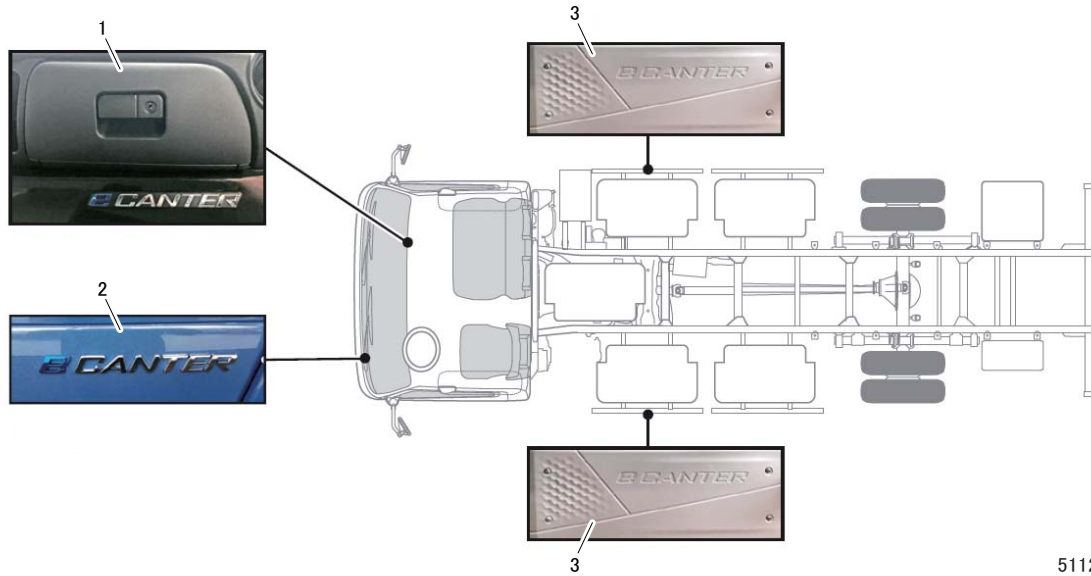
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1. Vehicle Identification

There is an eCANTER emblem on the instrument panel and under the front panel.

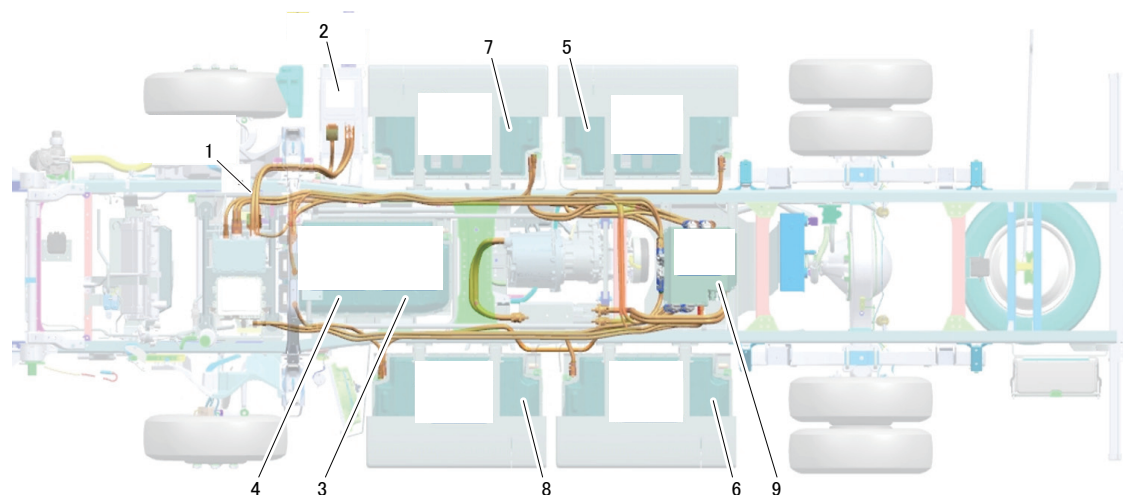
Also, the eCANTER logo is designed for the front side battery side cover. If even one eCANTER emblem or logo applies, please refer to this manual and perform the rescue operation.



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1. Instrument panel
2. Front panel
3. Battery side cover (with eCANTER logo)

2. Location of High Voltage Components and Parts

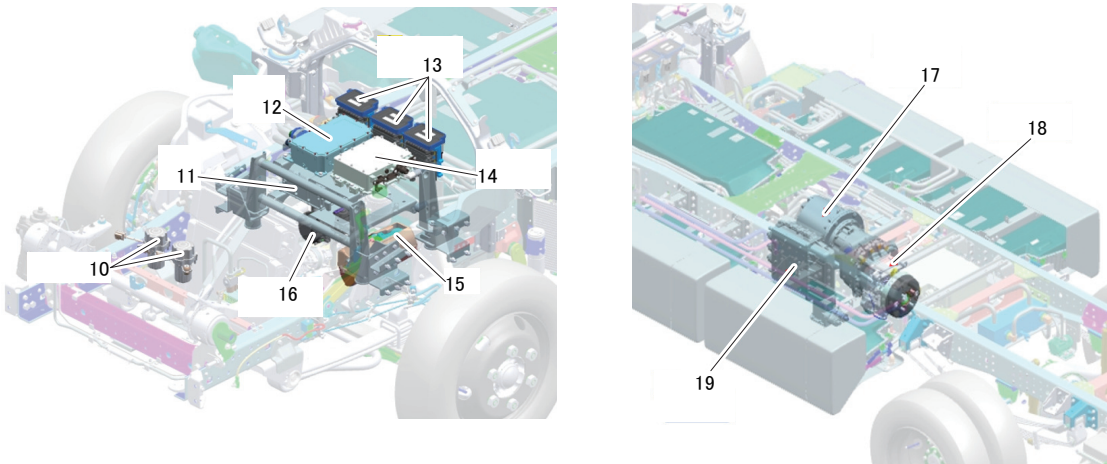


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1. HV cables
2. Inlet box
3. HV battery 1
4. HV battery 2
5. HV battery 3
6. HV battery 4
7. HV battery 5
8. HV battery 6
9. PDU

WARNING

If high voltage equipment or high voltage cables (orange sheathing) are damaged due to an accident related to the equipment shown above, there may be a short circuit. Be sure to put on insulated protective gear, such as insulated clothes and gloves, before starting rescue operations.



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10. Electric vacuum pump
11. OBC
12. DCB
13. HV water heater
14. DC/DC converter
15. ePS
16. e-A/C compressor
17. E-motor
18. Reduction gear
19. Inverter

 **WARNING**

If high voltage equipment or high voltage cables (orange sheathing) are damaged due to an accident related to the equipment shown above, there may be a short circuit. Be sure to put on insulated protective gear, such as insulated clothes and gloves, before starting rescue operations.

3. Precautions for High Voltage

● When doing rescue operations

1. In order to prevent electric shock, follow the steps below.
 - Always wear insulated gloves.
 - Never touch high voltage cables (orange sheathing).
2. Follow the steps below to prevent accidents.
 - Wear protective goggles.
 - Wear a mask.
3. Other precautions
 - Do not apply forces that may damage the lithium ion batteries.
 - If liquid leakage is suspected, completely dry the lithium ion batteries.



WARNING

If high voltage equipment or high voltage cables (orange sheathing) are damaged due to an accident, there may be a short circuit. Be sure to put on insulated protective gear, including insulated clothes and gloves, before starting rescue operations.

Copy this page and place it in a visible location on the outside of vehicles that are being subject to rescue operations or are in the operations area, to alert people nearby.

**HIGH VOLTAGE WORK
IN PROGRESS!!
DANGER!
DO NOT TOUCH!**

● Rescue operations

WARNING

- Always wear insulated gloves when performing rescue operations.
- If high voltage equipment or high voltage cables (orange sheathing) are damaged due to an accident, there may be a short circuit. Be sure to put on insulated protective gear, such as insulated clothes and gloves, before starting operations.

● Immobilizing the vehicle

1. Apply the parking brake securely.
2. Chock the wheels to immobilise the vehicle.

CAUTION

- The parking lock in a standard automatic gearbox is NOT equipped on this vehicle.
- The vehicle is not locked by only shifting into "P", and the vehicle may start to move on slopes.
- When parking, press and hold down the brake pedal, securely apply the parking brake, and then shift the lever into "P".

CAUTION

If the shift lever is set to "P" and the parking brake is not applied and the foot brake is released, the "P" display in the shift indicator flashes, the warning buzzer sounds continuously, and the starter switch cannot be turned to "LOCK".

● How to stop the high voltage system** WARNING**

- Wait at least 5 minute after stopping the EV system and shutting off the high voltage circuit, to discharge the smoothing capacitor in the inverter, before starting rescue operations. If you start rescue operations without waiting for the capacitor to discharge, you may receive an electric shock.
- The EV system may not be stopped with the mentioned method, depending on the condition of the vehicle. In such cases, be sure to put on insulated protective gear, such as protective clothes and gloves, before the operations.

 CAUTION

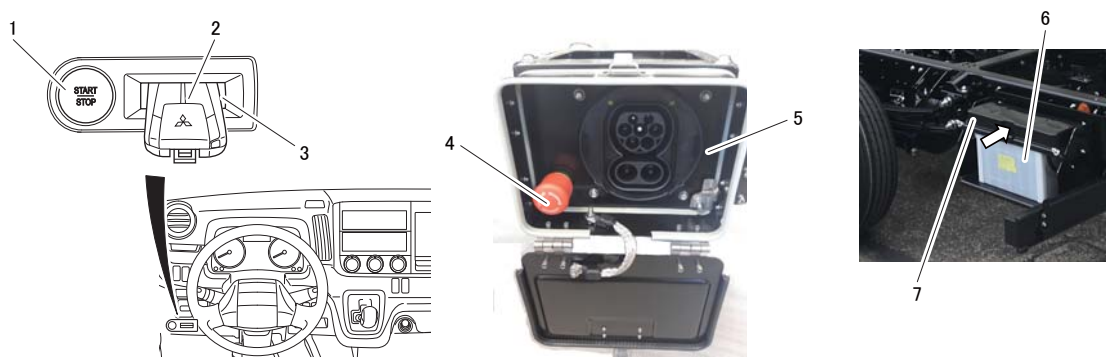
Note that if the battery cable is disconnected from the negative terminal of the 12-V battery, the door windows cannot be controlled.

4. Detailed steps for rescue operations are as follows.

The high voltage circuit can be shut off in any of following ways.

For safety, we recommend taking all measures.

1. Pull out the starter key from the key slot.
2. Press the emergency stop switch (high voltage shut off switch) in the inlet box located on the front right behind the mudguard of the front axle.
3. Disconnect the battery cable from the negative terminal of the 12-V battery.
4. Wait at least 5 minutes for the high voltage equipment to discharge.



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1. START/STOP button
2. Starter key
3. Key slot
4. Emergency stop switch
5. Inlet box
6. 12V battery
7. 12V battery cover

5. Precautions for Battery Packs

DANGER

- An explosion or fire may occur if there is a liquid leak or bad smell coming from the battery packs. If possible, move the car to a safe place, keep fire away from the vehicle, and evacuate any rescue crew and surrounding people to a safe place.
- If the battery packs catch fire, use a fire extinguisher (ABC type fire extinguisher) to put out the fire or call the fire department to ask for help.
Do not use water to extinguish the fire, using water may lead to electric shock or cause the fire to spread.

DANGER

- If the electrolyte that leaks out of the battery pack contacts your skin or clothes, use a large amount of water and soap to wash yourself very well, and then seek medical attention.
- If the electrolyte that leaks out of the battery pack is inhaled, move someplace where the air is clear. If a person has stopped breathing, administer artificial respiration and seek emergency medical attention.
- If the electrolyte that leaks out of the battery pack is ingested by someone, have them drink two large glasses of water if they are conscious, do not induce vomiting, and then seek medical attention.

6. Precautions for Charging

When charging, high voltage is being supplied from an external source, so shutting down the high voltage circuit in the vehicle may not create a safe environment, although safety measures have been taken.

Follow the steps below to cut the high voltage supply from the source.

1. Normal charging

1. Unplug the normal charging cable from the vehicle.
2. If it is not possible to unplug the normal charging cable, shut down the breaker of the panel board that is connected to the normal charging cable or unplug the socket side of the normal charging cable.

2. Quick charging

1. Press the emergency stop switch (usually a round red switch) which is located on the quick charger.
2. Unplug the quick charging cable from the vehicle.
(If it is not possible to unplug the quick charging cable from the vehicle, doing step 1 can stop the quick charger from supplying high voltage.)

7. Transportation Method for Damaged Vehicles

Since the traction motor uses a permanent magnet, rotation of the motor will generate an electric field. The traction motor rotates if the vehicle is towed, regardless of the position of the shift lever.

When transporting the vehicle, please transport it with the drive wheels (rear wheels), or all four wheels, lifted.

If the vehicle must be transported with the drive wheels (rear wheels) on the earth, remove the propeller shaft to prevent the traction motor from rotating.

Towing of eCANTER 1.0 is permitted at up to 20 km/h

CAUTION

Make sure the traction motor will not rotate. If the traction motor rotates, electricity will be generated, which will apply voltage to the connected cables.

Be careful of electric shock caused by current flowing to the vehicle if high voltage equipment or cables are damaged.

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